REMARKS

Claims 1, 5, 6, 9-12, 16-19, 23, 25, and 26 are amended herein. Claims 1, 2, 4-20, and 23-26 remain pending in the above-identified application.

Claims 1, 2, 4-20, and 23-26

Applicant respectfully requests reconsideration of the rejection of claims 1, 2, 4-20, and 23-26 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,952,526 (Pribat) or U.S. Patent No. 6,294,440 (Tsuda) in view of U.S. Patent No. 5,672,520 (Natsume). As amended, claims 1, 2, 4-20, and 23-26 recite, among other things, the pitch of pattern elements of the first plurality of patterns and the pitch of pattern elements of the second plurality of patterns are different and the second plurality of patterns partly overlies and partly does not overlie the first plurality of patterns in the direction of the thickness of the crystal due at least in part to the different pitches.

Pribat discloses a method of making a semiconductor including first insulation bands (20, 21, and 22) and second insulation bands (40, 41, and 42), wherein the respective bands have equal spacing or pitch, as seen for example in Figs. 7-9. Tsuda discloses a method for making a semiconductor wherein respective masks (102, 104) have equal spacing or pitch, as seen for example in Figs. 1-3. Natsume discloses a method of checking alignment accuracy in a photolithographic step. Pribat, Tsuda, and Natsume, individually or in any combination, fail to show or suggest the pitch of pattern elements of the first plurality of patterns and the pitch of pattern elements of the second plurality of patterns are different and the second plurality of patterns partly overlies and partly does not overlie the first plurality of patterns in the direction of the thickness of the crystal due at least in part to the different pitches.

The Office action notes Pribat and Tsuda do not disclose the pitch of pattern elements of one of the plurality of patterns and pitch of pattern elements of another of the plurality of patterns are different from each other (page 4, lines 10-12). The Office action states Natsume shows a pitch difference between respective pattern elements, which partly overlap and partly do not overlap (page 4, lines 13-21). However, the overlapping and non-overlapping portions of Natsume are not due to the

different pitches, as presently claimed. Instead, the non-overlapping portions of Natsume result from a permanent gap between underlying alignment check patterns 10, 20. Thus, the non-overlapping portion of Natsume exists irrespective of pitch differences and is not due to pitch differences.

Further, Natsume teaches away from the present invention. Section 2141.02 of the M.P.E.P. states, "(a) prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention." (emphasis in original). One of the primary benefits of the present invention is the ability to make a high quality crystal where dislocations do not reach the crystal and costly accurate alignment of relative mask patterns is not needed. (see e.g., page 14, lines 2-6; page 30, lines 2-10; page 6, lines 12-15; and page 3, lines 3-6). The *entire* purpose of Natsume is alignment accuracy, a requirement which the present invention obviates by including elements that partly overlie and partly do not overlie each other due at least in part to pitch differences between the elements.

Further regarding claim 4, the Office action asserts it would have been obvious to modify the combination of Tsuda and Natsume or Pribat and Natsume to select any proportion of pitches to produce a desired alignment. The Office action's assertion is flawed for at least two reasons. First, the given motivation is in error. Because the purpose of Natsume is to achieve perfect alignment/overlap (see e.g., column 3, lines 58-65), any adjustments to the pitches of Natsume would be made to obtain better alignment/overlap. The relationship between pitches recited in present claim 4 is tailored to achieve the specific result of obtaining one or more *non*-overlapping regions (see page 14, lines 7-17), not simply to achieve better/more overlap. Thus, it would not have been obvious to adjust the pitches of Natsume to match the claimed relationship because the result the relationship is tailored toward is quite different from any result adjusting the pitches of Natsume would be tailored toward.

The two immediately preceding paragraphs describe the manner in which Natsume teaches away from the present invention and claim. Because Natsume

teaches away from the claimed invention and the references do not show or suggest the claimed relationship, a *prima facie* case of obviousness has not been made.

Further regarding claim 5, the references, individually or in any combination do not show or suggest a plurality of patterns having pattern elements arranged in a plurality of different pitches. The Office action fails to address the language of claim 5. The Office action states, "(r)eferring to claims 5-6, the [references] teach[ ] using patterns of different lengths." (page 5, lines 11 and 12). However, differing element lengths are not recited in claim 5. Because the features of claim 5 are not addressed, Applicant is not being given a fair opportunity to reply. Further, the pitches disclosed in Pribat, Tsuda, and Natsume are constant and unchanging. The references do not show or suggest any of the patterns having elements arranged with a plurality of different pitches.

Further regarding claim 6, the references do not show or suggest pattern elements of a plurality of different *widths* in the direction of the arrangement or a plurality of patterns having pattern elements arranged at a plurality of different intervals. Pattern elements of a plurality of different widths in the direction of the arrangement is taught, for example, in Fig. 2 and lines 4-8 of page 17 of the specification. The Office action identifies a difference in *length* between adjacent pattern elements 13, 14 of Natsume. However, the length difference is not a difference in width in the direction of the arrangement (e.g., from left to right in Fig. 2). The Office action fails to address the "plurality of intervals" language recited in claim 6. Further, the intervals disclosed in Pribat, Tsuda, and Natsume are constant. The references do not show or suggest any of the patterns having elements arranged with a plurality of different intervals.

Further regarding claim 8, the references, individually or in any combination, do not show or suggest each of the first and second plurality of patterns taking form in pattern elements arranged in two directions. Regarding claims 8 and 9, the Office action (in lines 15-17 of page 5) states Natsume discloses a region where the overlying pattern element 100 does not overlie the underlying pattern elements 10, 20. This statement fails to address the claim language. Fig. 6 of the present specification illustrates a first and a second plurality of patterns taking form in pattern elements

arranged in two directions (i.e., the "a" and "b" directions). Pribat discloses elements arranged in a single direction (i.e., from left to right in Figs. 1-31). Natsume shows underlying elements 10, 20 arranged in two direction, but the overlying element 100 is only arranged in one direction (i.e., from left to right in all figures). Tsuda discloses two masks 602, 606 arranged in different directions from each other, but neither mask is arranged in two directions.

Further regarding claim 9, the references, individually or in any combination, fail to show or suggest a region where the second plurality of patterns overlies the first plurality of patterns in the direction of the thickness of the crystal and a region where the second plurality of patterns does not overlie the first plurality of patterns in the direction of the thickness of the crystal wherein both regions coexist in one direction of the two directions. Regarding claim 9, the Office action (in lines 15-17 of page 5) states Natsume discloses a region where the overlying pattern element 100 does not overlie the underlying pattern elements 10, 20. This statement fails to address the claim language.

Further regarding claim 10, the references, individually or in any combination, fail to show or suggest a region where the second plurality of patterns overlies the first plurality of patterns in the direction of the thickness of the crystal and a region where the second plurality of patterns does not overlie the first plurality of patterns in the direction of the thickness of the crystal wherein both regions coexist in both directions of the two directions. Regarding claim 10, the Office action (in lines 18-20 of page 5) states references teach using SiO_2 mask on a sapphire substrate to grow GaN. This statement fails to address the claim language.

Further regarding claim 16, the references, individually or in any combination, fail to show or suggest a step of selectively etching the base layer using the first pattern as a mask. The Office action does not address the claim language, "the base layer using the first plurality of patterns as a mask." In one part, regarding claim 16, the Office action (in lines 3-8 of page 3) states Pribat discloses removing a material through the apertures, but does not show how this removal uses the first pattern as a mask, as claimed. In another part (lines 8-10 of page 3), the Office action apparently

asserts the structure of Fig. 14 of Pribat is relevant to the etching using the first plurality of patterns as a mask. However, Fig. 14 of Pribat does not show or suggest the claim language. In yet another part (in lines 21-22 of page 5), the Office action states, regarding claim 16, the references disclose "etching and using a masking material," but does not address how the reference shows or suggests etching a base layer using the first plurality of patterns. The references fail to show or suggest a step of selectively etching the base layer using the first pattern as a mask.

Further regarding claim 17, the references, individually or in any combination, fail to show or suggest a step of selectively etching the intermediate layer using the second plurality of patterns as a mask and a step of removing the masking material of the second plurality of patterns between the second pattern formation step and the second growth step. Regarding claims 17-19, the Office action (page 5, lines 21-22) states, "[the references] teach[ ] etching and using a masking material," but the action does not address the particular claim language.

Further regarding claims 18 and 19, the references, individually or in any combination, fail to show or suggest forming the first plurality of patterns (claim 18, as amended) or forming the second plurality of patterns (claim 19, as amended) by forming respective indentations. In one part (lines 8-10 of page 3), the Office action, regarding claims 18 and 19, apparently asserts the structure of Fig. 14 of Pribat is relevant to the claimed formation of the first and second plurality of patterns by forming respective indentations. However, Fig. 14 of Pribat does not show or suggest the claim language. In another part (lines 21-22 of page 5), regarding claims 17-19, the Office action states, "[the references] teach[ ] etching and using a masking material," but the action does not address the particular claim language. Thus, again, Applicant is deprived of a fair opportunity to reply (M.P.E.P. § 706.02(j)).

Because Pribat, Tsuda, and Natsume, or any combination of them fails to show or suggest the substance of claims 1, 2, 4-20, and 23-26, the rejection of claims 1, 2, 4-20, and 23-26 is improper. Accordingly, Applicant respectfully requests that the rejection be withdrawn.

CONCLUSION

As it is believed that the application is in condition for allowance, a favorable action and a Notice of Allowance are respectfully requested.

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Respectfully submitted,

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